

Fluid Recycling

Reducing Waste and Increasing Readiness

The Army uses large quantities of hydraulic fluid and diesel fuel. Disposal of used hydraulic fluid and contaminated diesel fuel is costly. Procurement of new fluid and fuel can be reduced through reuse.

Arrmy installations and commands are striving to reduce waste generation in order to meet environmental regulations and to reduce their costs. **By implementing fluid recycling, cost and waste reduction can be achieved.** A variety of installations contacted the U.S. Army Environmental Center (USAEC) with

a need to reduce, recycle, or reuse certain fluids used in Army vehicles. The USAEC began working in cooperation with the Fuels and Lubricants Technology Team (FLT) located at Ft. Belvoir, on providing the Army user with a fluid recycling program. The program is divided into two projects which concentrate on filling the installations' need to reduce its used fluid waste stream. The fluid recycling program focuses on the recycling of Army specification hydraulic fluid and the implementation of a mobile fuel recycling apparatus called the Fuel Filtration/Fuel Additive Unit (FAU).



USAEC

Environmental Technology Division



Saving Money and Conserving a Non-Renewable Resource

Army Specification Hydraulic

Fluid The FLTT at Ft. Belvoir has evaluated the feasibility of recycling Army specification hydraulic fluid. Results show that Army specification hydraulic fluid (MIL-H-46170 and MIL-H-6083) may be recycled if it is mixed with 25% new fluid. Armed with these results, the FLTT kicked off a six month field demonstration at Anniston Army Depot, comparing seven commercially available hydraulic fluid recyclers. Five passed the Army's rigorous specifications for cleanliness and durability.

To satisfy the needs of the user, two of the acceptable hydraulic fluid recyclers are being upgraded. The upgrade will allow for real time monitoring of the recycling process. This will increase the recycler's accessibility, efficiency and aid implementation throughout the Army. U.S. Army Aberdeen Test Center (ATC) is working with USAEC in kicking off an effort to field demonstrate the upgraded recyclers to collect cost and operational data, provide payback information, and design a decision tree to aid the user in determining the applicability to their installation.

Army specification hydraulic fluid recyclers will decrease the waste stream, thus saving money by decreasing fluid procurement and waste disposal costs. Cost savings are dependent on amount of fluid, type of recycler, and which Army specification fluid is utilized. Troop readiness will increase because routine maintenance schedules will be easier to follow.

Fuel Filtration/Fuel Additive

Unit (FAU) The TARDEC Fuels and Lubricants Research Facility (TFLRF) at the Southwest Research Institute (SwRI) developed, designed, and fabricated a FAU. The FAU is a system of trailer mounted off-the-shelf technologies

which are used in harmony to decontaminate fuels while providing the ability to inject chemical additives. The system has the capability to inject four separate additives simultaneously to the fuel as it is being cleaned. For example, these additive options can be used to convert Jet A-1 into JP-8, add microbial biocides, and increase fuel stability.

The FAU has demonstrated its usefulness in a variety of situations at Army and Marine Corps locations such as Fort Stewart, Camp Pendleton, Twenty-Nine Palms, Charleston, SC and Blount Island. All of the users have been enthusiastic about the performance of the FAU which met their maintenance and environmental needs.

The FAU will have a dramatic impact on the readiness of our mechanized troops. The FAU will mitigate the fuel filter plugging problem, and in the case of fuel contamination emergencies, the FAU can quickly and safely decontaminate gross quantities of fuel. The additive system will allow for rapid conversion of fuels to different grades, i.e., Jet A-1 to JP-8. The reduction in time intensive removal of fuel cells, changing of filters, and disposal of contaminated fuel will decrease the man-hours in the motor pool. By decontaminating the fuel, it no longer has to be disposed of as a hazardous waste and the procurement cost of the fuel is recovered.

The benefits of these technologies include significantly reduced hazardous waste and economic savings.

solutions

For more information on USAEC-ETD technology programs please call the:

Army Environmental Hotline
1-800-USA-3845 or email:
t2hotline@aec.apgea.army.mil